



**PATIENT**

Lola Ahmed

**SPECIES**

Canine

**BREED**

Bichon

**SEX**

Spayed Female

**AGE**

13 Years

**WEIGHT**

N/A

**INTERPRETED BY**

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

**IMAGING PERFORMED BY**

Kelly Vazquez

**HOSPITAL NAME**

Ho Ho Kus VH

**REFERRING VET**

Dr. Brittany Scott

**INVOICE**

16677

**DATE**

8/2/22

**PRESENTING CLINICAL SIGNS**

History: Patient presents for PU/PD and urinary accidents. Current med: Baytril for UTI. History of on Pred for ear polyps/infection.

Abnormal PE/Chem/CBC/UA Results: WBC 19k, neut. 14k, phos. 7.1, anion gap27, ALT 229, ALP 486. U/A: E. Coli 1-10k on sample, USG 1.013.

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

**Urinary System**

The **urinary bladder** presented normal structure, however, a significant amount of dependent debris was noted.

The **kidneys** revealed largely normal size and structure, corticomedullary definition and ratio (cortex 1/3 of medulla) were essentially maintained with some mild age-related loss of curvilinear patterns regarding the capsule and C/M junction. The cortices presented largely uniform texture with some increased echogenicity expected for his age patient. Medullary structure differed distinctly from that of the cortex. The right kidney measured 5.67 cm. The left kidney measured 5.02 cm. Minor pyelectasia was noted in both kidneys.

**Adrenal Glands**

The **right adrenal gland** measured the upper limits of normal at 1.91 cm x 0.74 cm at the caudal pole and 0.96 cm at the cranial pole.

The **left adrenal gland** was enlarged, measuring 1.78 cm x 0.87 cm at the caudal pole and 0.52 cm at the cranial pole.

**Spleen**

The **spleen** presented a smooth homogeneous parenchyma hyperechoic to liver and renal cortical parenchyma. The capsule was smooth without noticeable expansion or deviation from within the spleen or adjacent pathology. The splenic vasculature demonstrated normal volume without signs of congestion or thrombosis. No sonographic evidence of acute or chronic inflammatory, neoplastic, or infarctual changes were noted.

**Liver**

The **liver** was uniformly swollen with minor, excessive gallbladder debris and over distension with dependent and suspended bile without evidence of overt mucocele formation. However, excessive sludge was present. The liver presented coarse architecture with mildly increased portal markings and subtle, mixed echogenic changes. This is consistent with vacuolar hepatopathy and some level of remodeling and history of inflammatory component. There was no overt suspicion of neoplasia. This is a moderate change.

**Gastrointestinal**

Examination of the **gastrointestinal tract** revealed a stomach and intestine free of stasis, of normal wall thickness, acceptable curvilinear mural detail, and peristaltic activity. Small and large intestine demonstrated normal luminal chyme and stool consistency respectively. No obstructive or overt infiltrative disease was noted. No associated abnormal lymphatic activity was noted.



**PATIENT**

**Pancreas**

Lola Ahmed

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Pancreatic duct and capsular contour were acceptably normal and parenchyma respected normal curvilinear patterns. No overt evidence of active inflammatory or neoplastic disease was noted.

**SPECIES**

Canine

**ULTRASONOGRAPHIC FINDINGS**

**BREED**

Bichon

- Mild adrenal enlargement
- Urinary bladder debris
- Mild nonspecific age-related renal changes with pyelectasia
- Benign hepatopathy with remodeling

**SEX**

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Spayed Female

If the patient appears Cushingoid, then work up for PDH is indicated. Urine culture and sensitivity and 4-week antibiotic protocol recommended. A combination of potential Cushings/PDH, along with concurrent UTI may be playing a role in this patient. Blood pressure measurements indicated. Recheck sonogram after 4 weeks of antibiotic therapy for UTI, given the dependent debris and pyelectasia.

**AGE**

13 Years

**Chronic UTI Protocol**

**WEIGHT**

N/A

I recommend **Enrofloxacin** (5-10 mg/kg SID PO) (In patients > 1 year of age) in late pm after urination to maximize urinary concentrations overnight. This assumes that culture supports this use. Repeat **culture** at 3-4 weeks and continue treatment at least 7-10 days post negative urinary sediment and negative culture. *Note: Negative culture does not necessarily mean lack of UTI.* Other favorite antibiotics for chronic UTI include third generation Cefa (Ceftiafur or similar s.i.d. injectable) or Clavamox. If suspicion of occult urinary incontinence is present then **phenylpropanolamine (PPA)** (1-2 mg/kg BID) can be employed long term to enhance urethral tone.

**INTERPRETED BY**

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

Cushing Work UP

**IMAGING PERFORMED BY**

**Efficient & Accurate Cushing's Work up-Lindquist**

Kelly Vazquez

**Notes regarding Cushing's Clinical Presentations:**

**HOSPITAL NAME**

Ho Ho Kus VH

*Nearly all Cushing's dogs have SAP elevations and true PU/PD (USG < 1.025) and most are polyphagic. Cushing's dogs are > 6 years and usually > 9 years old, usually have poor skin coats, body scores > 3/5, and are usually sedentary animals.*

**REFERRING VET**

Dr. Brittany Scott

*Its important to remember that Cushing's dogs usually look and play the part and other diseases cause false + stress related cortisol spikes. On rare occasion a Cushing's dog will not follow the rules but this is truly an exception.*

**INVOICE**

16677

*Potential Cushing's patient workups can be costly and frustrating if not definitive and, in my experience, the non-definitive patient usually has something else going on that may be contributing to some of the clinical signs a Cushing's dog will have, especially SAP elevations or PU/PD. Based on this prelude of information I came up with the following algorithm in the spirit of diagnostic efficiency.*

**DATE**

8/2/22

*The following suggested protocol is based on current available literature on Cushing's disease and extensive clinical-sonographic experience evaluation + Cushing's and False + LDDST & ACTH stim. cases in order to maximize the efficiency of a Cushing's workup in practice.*



## PATIENT

Lola Ahmed

## Screen first, workup second

1) **UA:** Repeatable (2-3 urine samples) Urine specific gravity & urine cortisol/creatinine ratio (UCCR): If **repeatable USG < 10.20 and + UCCR** move to next step 2.

## SPECIES

Canine

*Note: UA is inexpensive and easy to obtain and if UA criteria is not met for Cushing's then resources can be spent into other more pertinent diagnostics or left on hold until the UA criteria is met in emerging Cushing's cases.*

## BREED

Bichon

2) **Sonogram:** Does the patient **have concurrent disease** clinically or sonographically as non-Cushing's illness will influence the potential false + LDDST or even ACTH stim. The sonogram gives a global perspective of the internal health of the patient to be considered in the Cushing's workup as an assessment of concurrent disease. Is there a concurrent neoplastic process, UTI pancreatitis, mucocele....? Are the adrenals enlarged (Cushing's-PDH, stress, age related or breed variant), or atrophied (iatrogenic Cushing's or adrenal burnout), have asymmetric enlargement (Adrenal tumor, hyperplasia, adenoma, age related variant), or is there vascular invasion (Invasive pheo with false + UA criteria or adenocarcinoma or phrenic thrombosis)? The sonogram answers these questions proactively.

## AGE

13 Years

**Address & treat concurrent disease first before performing Cushing's testing or testing will be artificially altered increasing false negatives and positives.**

## WEIGHT

N/A

3) **LDDST** (0.01 D-Sodium phosphate mg/kg IV **with precise dosing\*\*\*\***) (Better screening test but plagued with false + but considered more specific than ACTH stim) Use if there is potential early Cushing's or if adrenal asymmetry present on sonogram suspecting tumor. Use LDDST in cats at a higher dose (0.1 mg/kg IV). **Interpretation LDDST:** Look at 8-hour post first: If > 1.4 = Cushing's. Then look at 4-hour: if > 1.4 or > 50% baseline = Cushing's. 4-hour do then 8-hour spike most consistent with PDH. Flat line high constant curve without dip more consistent with tumor but can be PDH. See attached graph.

## INTERPRETED BY

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

## IMAGING PERFORMED BY

Kelly Vazquez

## HOSPITAL NAME

Ho Ho Kus VH

## REFERRING VET

Dr. Brittany Scott

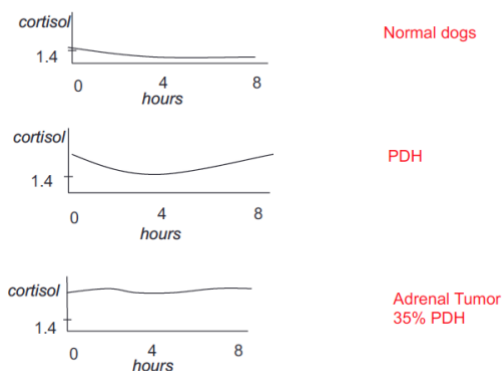
## INVOICE

16677

## DATE

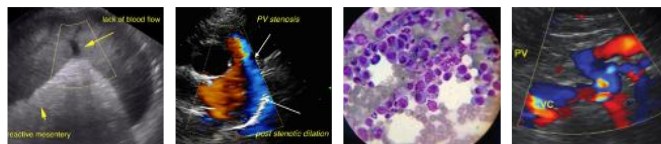
8/2/22

## LDDS



Courtesy: Rebecca Berg DACVIM, DECVIM

4) **ACTH stim.** (Better confirming test but can have false +) Use if the patient "looks" Cushingoid or if bilateral adrenal enlargement is present, or high normal width on sonogram, or if iatrogenic Cushing's suspected (Cortisone Tx in past). ACTH stim is better for diagnosis of Addison's, iatrogenic Cushing's,



**PATIENT**

Lola Ahmed

and Cushing's therapy monitoring but problematic with initial Cushing's diagnosis. First dx LDDST is suggested.

5) If **diabetic** then run both LDDST & ACTH stim but stabilize as much as possible first.

**SPECIES**

Canine

5) Run a **serial blood pressure** in a BP friendly non "white coat effect" atmosphere. Run at least 3 at different times over a few hours or when eating as the patient tends to be calm when eating or give Torbutrol when entering the facility. Cushing's hypertension is usually 150-180 systolic range while pheochromocytoma range is more often > 180 systolic.

**BREED**

Bichon

6) **Perform CT** of the pituitary to identify macro adenoma expansion if any lethargy or dullness or other central clinical CNS signs are minimally present. CT for adrenal may be more thorough for adrenalectomy surgical planning if ultrasound views of the CVC were problematic.

**SEX**

Spayed Female

7) **Adrenectomy** for adrenal mass is prescribed then it is essential to stabilize the patient first regarding secondary disease such as organ dysfunction, hypertension, diabetes mellitus, hypernatremia, thromboembolic risk urinary and other infection in order to minimize potential for operative and postoperative complications as they are common in adrenalectomy. Trilostane stabilization therapy for Cushing's would be the first approach then address surgery and hypertension should be managed ideally < 160 systolic with ace inhibitors, phenoxybenzamine, or amlodipine.

**AGE**

13 Years

Suggested reading:

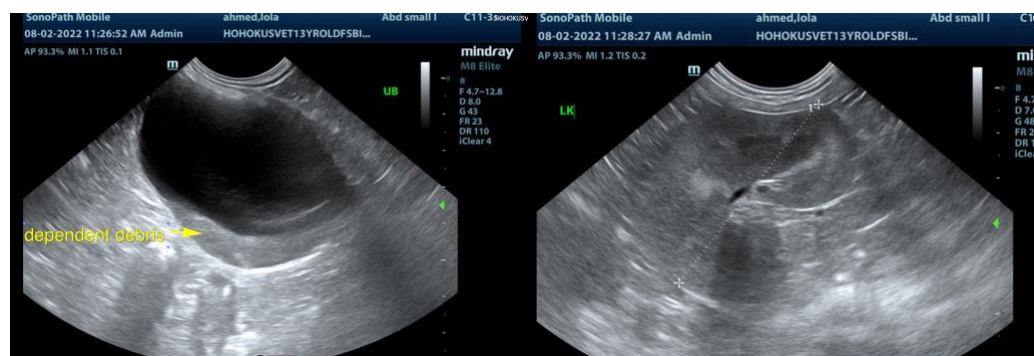
**WEIGHT**

N/A

Behrend EN, Kooistra HS, Nelson R, et al. Diagnosis of Spontaneous Canine Hyperadrenocorticism: 2012 ACVIM Consensus Statement (Small Animal). J Vet Intern Med 2013;27:1292-1304

**INTERPRETED BY**

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

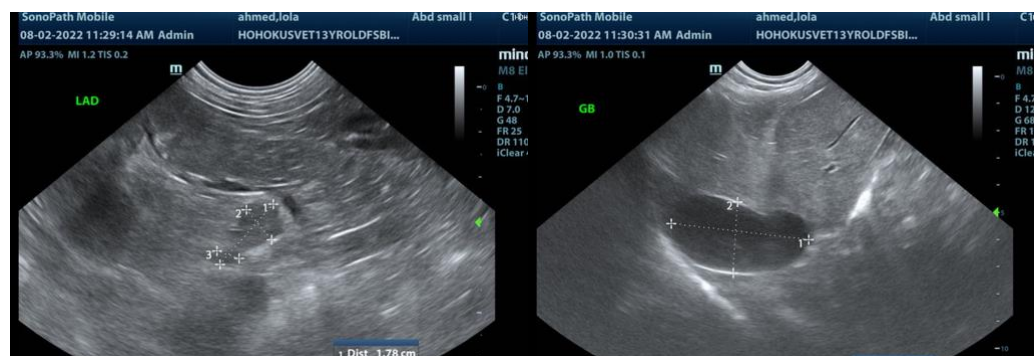


**IMAGING PERFORMED BY**

Kelly Vazquez

**HOSPITAL NAME**

Ho Ho Kus VH



**REFERRING VET**

Dr. Brittany Scott

**INVOICE**

16677

**DATE**

8/2/22



**PATIENT**

Lola Ahmed

**SPECIES**

Canine

**BREED**

Bichon

**SEX**

Spayed Female

**AGE**

13 Years

**WEIGHT**

N/A

**INTERPRETED BY**

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

**IMAGING PERFORMED BY**

Kelly Vazquez

**HOSPITAL NAME**

Ho Ho Kus VH

**REFERRING VET**

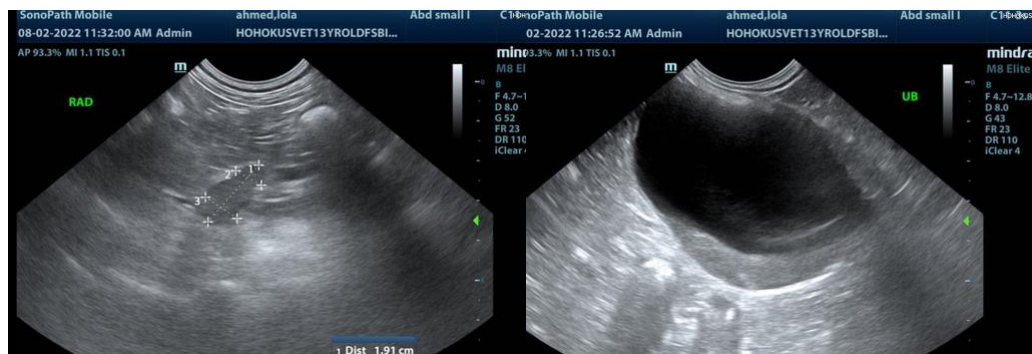
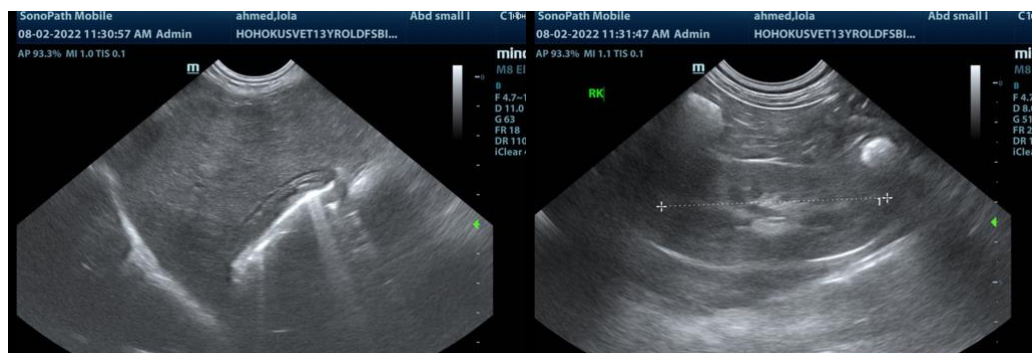
Dr. Brittany Scott

**INVOICE**

16677

**DATE**

8/2/22



The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

**Eric Lindquist**, DMV, DABVP, Cert. IVUSS, CEO of SonoPath.com  
info@SonoPath.com